

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)
)
Utilizing Rapidly Deployable Aerial) PS Docket No. 11-15
Communications Architecture in Response to an)
Emergency)

To: The Commission

COMMENTS OF CTIA–THE WIRELESS ASSOCIATION®

I. INTRODUCTION

CTIA–The Wireless Association® (“CTIA”) respectfully submits these comments in response to the Federal Communications Commission’s (“FCC” or “Commission”) above-captioned Notice of Inquiry (“*NOI*”) regarding the deployment of aerial telecommunications architecture (“DACA”) to provide immediate communications in the aftermath of disasters.¹

CTIA has noted previously that the temporary deployment of aerial transmissions on spectrum licenses for other purposes presents risks of harming ongoing operations or restoration efforts of existing services, including commercial mobile service and wireless consumers.² To the extent the Commission is considering public safety spectrum for DACA use, it must ensure a robust interference protection regime. Any framework must include prior *and* real-time

¹ *Utilizing Rapidly Deployable Aerial Communications Architecture in Response to an Emergency*, Notice of Inquiry, PS Docket No. 11-15, FCC 12-53 (rel. May 24, 2012) (“*NOI*”).

² *See* Comments of CTIA, PS Docket No. 11-15 at 5-6 (filed Feb. 28, 2011) (“CTIA PN Comments”); *see also* *Public Safety and Homeland Security Bureau Seeks Comment on Rapidly Deployable Aerial Telecommunications Architecture Capable of Providing Immediate Communications to Disaster Areas*, Public Notice, PS Docket No. 11-15, 26 FCC Rcd 666 (PSHSB rel. Jan. 28, 2011). *See* CTIA Presentation at the FCC Workshop on Rapidly Deployable Aerial Communications Architecture at 3, Washington, D.C. (Oct. 31, 2011) (“CTIA Workshop Presentation”), available at <http://apps.fcc.gov/ecfs/document/view?id=7021752030>.

coordination to prevent disrupting operating services being used by wireless subscribers or hindering critical restoration efforts. CTIA takes particular interest in any consideration of DACA use on CMRS spectrum, which would pose a multitude of challenges to wireless consumers. Any DACA solution must be deployed only as a last resort and after negotiation, agreement, and the express authorization of the relevant licensee so as to avoid causing harmful interference to wireless consumers.

Wireless providers share the Commission's goal of provisioning communications to protect life and property when disaster strikes. Indeed, CTIA has been a leader in advancing service continuity and restoration practices generally and has participated actively since the FCC began its review of DACA. In the aftermath of disasters, commercial wireless services are of tremendous importance to residents, first responders, and aid workers. As the Commission proceeds in this inquiry, it should maintain the guiding principle that any DACA policy framework must avoid harming existing consumers who will rely on these networks at the exact time that a DACA deployment is considered.

This *NOI* explores many threshold issues that policymakers must address as they consider DACA use in the aftermath of disasters. As detailed herein, fundamental issues remain, including the following:

- Can DACA offer a short-term communications solution without impairing continuity of service or service restoration operations – especially in the context of the cellularized architectures and dense device penetration of commercial mobile systems?
- Would DACA deployment provide an efficient, cost-effective solution with equal or greater capacity than ongoing – albeit at times limited – service or the likelihood of restoration within a certain period?
- Is the FCC considering DACA to aid public safety communications restoration or citizen communications to 911?

It is essential to develop a robust record on these issues and others before pursuing a DACA initiative further.

II. ANY DACA FRAMEWORK MUST ENSURE A ROBUST INTERFERENCE PROTECTION REGIME

The Commission must ensure that all existing consumers are safeguarded from harmful interference in a DACA regulatory framework, regardless of whether DACA is envisioned to be deployed on public safety or any other spectrum. A robust interference protection regime will involve tackling many challenging issues, including how DACA systems are organized and planned and how DACA systems will avoid disrupting services that remain operational or inhibit their restoration. To this end, the *NOI* asks proper questions.

A. The *NOI*'s Questions Regarding the Potential for Harmful Interference Are a Critical Starting Point for Any Review of DACA

The Commission must ensure that DACA does not result in the unintended consequence of creating harmful interference to consumers utilizing the key services that have been maintained through a disaster and/or are being restored. In the event that the Commission develops a DACA framework, it is imperative to protect consumers, including consumers on the service DACA is replacing as well as users of any services that could be impacted. For example, even if DACA is deployed to “step into the shoes” of a first responder network service using public safety spectrum, such aerial operations could cause interference to commercial wireless services and their users. As AT&T noted in previous DACA comments “[t]he potential for interference already exists between 850 MHz cellular systems and 800 MHz public safety receivers, even if operating from terrestrial base stations.”³

³ Comments of AT&T, PS Docket No. 11-15, at 5 (filed Feb. 28, 2011) (“AT&T PN Comments”)

The *NOI* asks important questions. For example, the Commission seeks comment on how the operation of DACA transmitters would fit into the current spectrum management framework and what approaches it could take for DACA systems that would operate on spectrum of existing licenses.⁴ The Commission asks whether DACA technologies can “use frequencies in areas where commercial base stations are out of service but have been coordinated with neighboring service markets” and “[o]nce base stations that were out of service come back into service, [whether] frequency reuse [can] be coordinated with DACA technologies to limit interference[.]”⁵ The record to date has demonstrated that these questions pose significant challenges and are a pressing concern regarding DACA deployment in CMRS bands.⁶ For example, Sprint Nextel has explained the fundamental impact of an aerial deployment in a terrestrial network as follows:

By controlling which frequencies are transmitted in which direction from [a cell] tower, interference with signals from nearby towers can be avoided. When the ‘tower’ is airborne, however, all antennas are pointed in essentially the same direction – down. This generally makes it impossible to prevent signals from overlapping with the same frequencies from functional towers on the ground.⁷

Post-disaster operations and restoration of service occur under fluid, dynamic circumstances. To the extent they occur, disabled sites may be very localized, and overall service often is maintained – perhaps with less capacity or coverage – but operational nonetheless. In some instances, post-disaster service degradations may be caused by congestion

⁴ *NOI* ¶ 20.

⁵ *Id.* ¶ 27.

⁶ See, e.g., Comments of APCO, PS Docket No. 11-15, at 1-2 (filed Feb. 28, 2011) (“APCO PN Comments”); AT&T PN Comments at 2-5; Comments of NPSTC, PS Docket No. 11-15, at 3-6 (filed Feb. 28, 2011); Comments of Rex Buddenberg, PS Docket No. 11-15, at 4 (filed Feb. 28, 2011); Comments of SIA, PS Docket No. 11-15, at 6 (filed Feb. 28, 2011); Comments of Sprint Nextel, PS Docket No. 11-15, at 6 (filed Feb. 28, 2011) (“Sprint Nextel PN Comments”).

⁷ Sprint Nextel PN Comments at 7.

as many users try to utilize the network simultaneously – and a DACA deployment would possess no advantage in such a situation. Cell sites may go down but resume operations spontaneously and automatically. For example, cell sites will resume operations immediately when power is restored. Carriers may have little, if any, advance knowledge of the schedule for restoration of service when impacted by the failure of electric or backhaul providers, but good public policy dictates that restoration of these sites is not delayed or impaired due to coordination procedures with interim, third-party deployments. Yet overlapping platforms like DACA are by their nature difficult to deploy without impacting the underlying services. As part of its analysis, the Commission should take into account these varied scenarios and consider whether any DACA authorizations should be restricted to specific circumstances.⁸

It is essential to develop a more detailed record with respect to these difficult and challenging issues prior to any further consideration of DACA.

B. Any DACA Operations Must Be Subject to Both Prior and Real-Time Coordination

Should the Commission pursue a regulatory framework for DACA operations, prior *and* real-time coordination are crucial to ensure that operating services are not disrupted and restoration efforts are not further encumbered. Prior coordination is needed to identify circumstances where temporary DACA deployment could occur to aid communications without causing harmful interference to, or otherwise disrupting, existing services. The *NOI* notes the importance of prior coordination as a key element to an interference regime.⁹ It seeks comment on frequency planning and minimizing the potential for harmful interference, noting that

⁸ AT&T, for example, notes that “[i]nterference issues are reduced if DACA is only deployed during an emergency when almost all cell sites are out of commission.” AT&T Presentation at the FCC Workshop on Rapidly Deployable Aerial Communications Architecture (DACA), Washington, D.C., at 4 (Oct. 31, 2011) *available at* <http://apps.fcc.gov/ecfs/document/view?id=7021752028>.

⁹ *NOI* ¶ 16.

“frequency preplanning will be vital to successful deployment of DACA systems in order to avoid harmful interference and to enable terrestrial communications to be restored on an efficient and timely basis.”¹⁰ CTIA has previously detailed the importance of prior coordination, stating that transitioning from terrestrial infrastructure to an aerial architecture necessarily creates a new interference scenario that must be accounted for prior to deployment.¹¹ Without prior coordination, any DACA deployment risks negatively impacting consumers and causing unnecessary challenges to existing operations and restoration efforts.¹²

The Commission also raises the issue of real-time coordination during emergency response efforts when using DACA solutions.¹³ With respect to mitigating the potential for harmful interference, the Commission asks if “advance coordination [is] sufficient...?”¹⁴ It is not – real-time coordination is equally vital given the dynamic post-disaster radio environment. As noted above, post-disaster maintenance and restoration of service is dynamic and a highly fluid process. The restoration of power or diverse backhaul routing instantaneously brings a cell site online to reestablish service – provided there is no aerial transmitter interference.

Aerial architecture when disaster strikes is further complicated by the flurry of *ad hoc* wireless rule waivers and requests for special temporary authority (“STA”). These STAs are granted to existing providers as they alter their usual operating parameters based on the particular on-the-ground situation to execute recovery and restoration plans while emergency personnel

¹⁰ *Id.* ¶ 23.

¹¹ *See* CTIA PN Comments at 6; CTIA Workshop Presentation at 2.

¹² *See, e.g.,* APCO PN Comments at 2 (describing the “wide variety of factors that could impact existing radio systems” by any use of aerial telecommunications); Sprint Nextel PN Comments at 6 (“all aerial platforms present special interference risks both in the affected area and in adjacent areas where terrestrial service is still operational”).

¹³ *NOI* ¶ 15.

¹⁴ *Id.* ¶ 30.

enter the region.¹⁵ Indeed, the Commission granted more than 90 STA requests and 100 temporary frequency authorizations for short-term emergency wireless and broadcast operations in the wake of Hurricanes Katrina and Rita.¹⁶ In addition to impacting this rapidly evolving environment in the aftermath of an event, the risk of inserting aerial transmissions also includes interference to users of commercial wireless systems that successfully maintained operations in the disaster area or that will restore service promptly. For example, in the immediate wake of Hurricane Katrina, thousands of cell sites in the affected areas remained operational at the same time that the wireless industry was able to repair damaged cell sites and switches, put up new cell sites, and distribute over 25,000 wireless phones to individuals in the affected area.¹⁷ Network operators also may substitute coverage for capacity, or may coordinate restoration efforts with a compatible carrier to create a patchwork of coverage across more than one network to serve wireless users. If a DACA system is authorized in the area, consistent real-time coordination – including beyond those carriers serving the affected area – is necessary given the dynamic post-disaster radio environment.

III. TO THE EXTENT THE FCC IS CONSIDERING DACA USE ON COMMERCIAL MOBILE SPECTRUM, THE RELEVANT LICENSEE MUST EXPRESSLY AUTHORIZE ANY SUCH USE

As a threshold matter, the Commission should make clear that any DACA deployment on commercial spectrum must be negotiated directly with the relevant licensee and requires the

¹⁵ See CTIA PN Comments at 5.

¹⁶ *Id.* See Written Statement of Kevin J. Martin, Chairman, Federal Communications Commission at Hearing on Public Safety Communications from 9/11 to Katrina: Critical Public Policy Lessons, Before the Subcommittee on Telecommunications and the Internet, Committee on Energy and Commerce, U.S. House of Representatives (Sept. 29, 2005), 2005 FCC LEXIS 5321 *21-31.

¹⁷ Comments of CTIA-The Wireless Association®, Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks, EB Docket No. 06-119 (Aug. 7, 2006).

express approval of that licensee, whether the intended use is for public safety-related operations or general use. The many challenges involved in DACA use on commercial mobile spectrum, ranging from basic issues of interference to real-time coordination during service restoration efforts, necessitate the individual negotiation and approval by the relevant licensee. AT&T provided an example of how unauthorized use can impair a licensee's restoration efforts:

After Hurricane Katrina, the wireless frequencies licensed to AT&T's predecessor wireless companies were broadcast by third parties without notice or authorization. As AT&T's predecessor companies attempted to restore their networks, the licensed frequencies were already occupied and they encountered substantial difficulties getting the frequencies vacated to be able to make their base stations operational.¹⁸

Wireless providers, with intimate knowledge of their networks and internal capabilities, are in the best position to make decisions regarding the restoration or temporary replacement of the network using their licensed frequencies. Voluntary arrangements to deploy alternative technologies in the aftermath of a disaster are not unprecedented, and have been made through spectrum leasing or other operational arrangements.¹⁹ DACA should be no different.

After a disaster, wireless providers' primary goal is to restore any interrupted service to wireless consumers as quickly as possible. If an operator believes that a DACA deployment would be an efficient and appropriate method to restore communications – for example, if nearly all of the operator's cell sites were knocked out – then the operator may choose to deploy a DACA system. In contrast, if an operator can efficiently restore communications or if DACA would otherwise divert resources and slow down restoration efforts, the operator must be able to decline a DACA system. The Commission seeks comment on one provider's view that "DACA

¹⁸ AT&T PN Comments at 8-9.

¹⁹ See *Recommendations of the Independent Panel Reviewing the Impact of Hurricane Katrina on Communications Networks*, Order, 22 FCC Rcd 10541, 10551 ¶ 26 n.45 (2007).

technologies should only be utilized as a last resort, where other existing terrestrial options for restoring service are inadequate to address the circumstances, to avoid impeding the restoration efforts that carriers typically bring to bear in these types of emergency situations.”²⁰ Sprint Nextel, for one, has concluded that the “operational challenges and interferences risks associated with aerial platforms outweigh their potential benefits.”²¹ The record to be developed here should explain how such deployments can be made to work in a way that is a net-positive for consumers.

IV. MANY QUESTIONS REMAIN REGARDING THE OPERATIONAL EFFICIENCY OF DACA SYSTEMS

CTIA commends the Commission for its efforts to further develop the record with respect to the capabilities of DACA systems and the issues that must be addressed prior to pursuing a regulatory framework for such systems. Indeed, there are significant challenges to DACA deployment in CMRS spectrum – hurdles that may not be overcome. The FCC must evaluate these hurdles as it considers any further initiatives to advance and authorize DACA systems.

Many questions remain regarding the efficiency and performance of DACA systems in post-disaster circumstances. The *NOI* notes that “[a]dequate DACA coverage within the area affected by a disaster will be critical to success of any DACA deployment.”²² It asks questions regarding the geographic coverage and limitations of DACA technologies, including whether there are limits in densely populated metropolitan areas and if DACA technologies can provide in-building coverage or service in geographically complex areas.²³ It is also critical to

²⁰ *NOI* ¶ 18.

²¹ Sprint Nextel PN Comments at 1.

²² *Id.* ¶ 22.

²³ *Id.*

understand exactly how DACA can provide coverage in disaster areas where individual cell sites may be inoperable, but service is otherwise operational. Answers to these questions are crucial to better understand whether DACA systems would be capable post-disaster solutions in commercial mobile spectrum.

The Commission also should explore whether DACA systems are able to provide users with capacity beyond that which a wireless provider's maintained operations provide or early restoration efforts will soon provide. It also should assess the industry and public safety resources and personnel that would be required to enable and coordinate a post-disaster DACA operation and consider whether the diversion of costs and personnel could delay other recovery and restoration efforts that could better serve wireless users. The answers to these questions may vary based on the specific circumstances, requiring further consideration to determine when a DACA deployment may be feasible.

Even more operational questions must be answered regarding any DACA operations on CMRS spectrum. For example, would a DACA system be capable of supporting a full contingent of existing services and the broad range of devices and capabilities citizens expect from their network providers? Would a DACA system complete 911 calls to the appropriate PSAP and relay accurate location information? Would a DACA system evolve with the evolution of NG911? Would a DACA system comply with WPS protocols to ensure National Security / Emergency Preparedness personnel communications?

V. CONCLUSION

CTIA welcomes the opportunity to raise and potentially address the multitude of critical issues that must be answered prior to considering a regulatory framework for DACA use in the aftermath of disasters. CTIA looks forward to developing a full record in this regard.

Respectfully submitted,

By: /s/ Brian M. Josef

Brian M. Josef

Assistant Vice President, Regulatory Affairs

Michael F. Altschul

Senior Vice President, General Counsel

Christopher Guttman-McCabe

Vice President, Regulatory Affairs

CTIA – The Wireless Association®

1400 16th Street, NW, Suite 600

Washington, D.C. 20036

(202) 785-0081

Dated: July 25, 2012